NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2020

COMPUTER APPLICATIONS TECHNOLOGY: PAPER I

MARKING GUIDELINES

Time: 3 hours 150 marks

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SECTION A

QUESTION 1

1.1	1.1.1	J ✓	(1)
	1.1.2	L ✓	(1)
	1.1.3	G ✓	(1)
	1.1.4	H ✓	(1)
	1.1.5	C ✓	(1)
1.2	1.2.1	A ✓	(1)
	1.2.2	C ✓	(1)
	1.2.3	B ✓	(1)
	1.2.4	C ✓	(1)
	1.2.5	B ✓	(1)
	1.2.6	B ✓	(1)
	1.2.7	A ✓	(1)
	1.2.8	C ✓	(1)
	1.2.9	B ✓	(1)
	1.2.10	B ✓	(1)
			[15]

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QUESTION 2

2.1 2.1.1 EULA ✓ (1)

2.1.2 title bar ✓ (1)

2.1.3 cache memory ✓ (1)

2.1.4 Uniform Resource Locator ✓ (1)

2.1.5 smart card ✓ (1)

2.1.6 ROM ✓ (1)

2.2 Give an appropriate definition that would **BEST** describe the following terms.

2.2.1 **Ergonomics:** The study and design of the workplace for the efficiency, comfort and safety of people in work environments. ✓ (1)

2.2.2 **Compressing** refers to the process of reducing the size of a file by producing a smaller, compressed version of the file. ✓

OR

Compressing is to zip a file to safe space while making the file smaller. ✓ (1)

2.2.3 **Defragmentation software:** A utility program that rearranges and consolidates the scattered parts of files on a disk so that they can be retrieved more quickly. ✓

OR

Gathers up data on a disk so that the parts are continuous/ contiguous. ✓ (1)

2.2.4 **Network interface controller:** A controller that is used to connect the computer to the network. ✓

OR

Circuitry that controls communication between the computer and a network. ✓ (1)

[10]

25 marks

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SECTION B

QUESTION 3 SYSTEM TECHNOLOGIES

3.1 3.1.1

<table>
<tr><td colspan="2">

[<https://www.pcexpress.co.za/>]</td></tr>
<tr><td>Name of hardware</td><td>Power supply
OR
PSU
(1)</td></tr>
<tr><td>Main function</td><td>The power supply unit is the piece of hardware that converts the power provided from the outlet into usable power for the many parts inside the computer case. It converts the alternating current from your wall outlet into the direct current that the computer components require. ✓
OR
Controls the amount of electricity that is available for the computer. ✓
(1)</td></tr>
</table>

3.1.2



[<https://www.warehouse.co.za/>]

Name of hardware	Network switch/switching hub/bridging hub ✓ **OR** Switch ✓ **OR** Router ✓ **OR** Routing switch ✓ (1)
Main function	This is a device that connects computers in a single network with cables, to enable communication between them. ✓ **OR** A network switch is networking hardware that receives and forwards data to the destination device from a starting device. ✓ (1)

3.1.3



[<https://www.smallbusinesscomputing.com/ProductReviews/Hardware>]

Name of hardware	Multifunction printer ✓ (1)
Main function	A **multifunction printer** (MFP) is a device that consolidates (combines) the functionality of a printer, copier, scanner and/or fax or many different machines into one machine. ✓ (1)

3.1.4



[<https://simplynuc.co.uk/>]

Name of hardware	HDMI CABLE (High-Definition Multimedia Interface) ✓	(1)
Main function	**HDMI** is a connector and cable OR connection used to transmit high-quality and high-bandwidth streams of audio and video between devices. ✓	(1)

3.2 3.2.1 GHz is the unit in which the speed of the CPU is measured and it determines the clocking speed of your computer when you play a game to ensure the game is not lagging. ✓

OR
This enables a gamer to achieve a higher quality gaming experience. ✓

OR
The higher the value, the faster the computer will run. ✓ (1)

3.2.2 **Solid-state drives (SSDs)** use flash memory to deliver superior performance and durability. ✓

OR
SSDs are more durable, run cooler and use less energy and are faster than HDDs. ✓

OR
There are no moving parts in a SSD ✓

HDDs use spinning disks, or platters, to read and write data and they are slow. ✓

OR
Slower than an SSD ✓ (2)

3.2.3 Liquid Crystal Display ✓ (1)

3.2.4 (a) RAM
To increase the amount of RAM so as to reduce swapping. ✓

OR

- If the system allows it, replace the DDR3 RAM with DDR4 RAM or replace the DDR4 RAM with a faster DDR4 RAM to improve the access speed. ✓

(b) Sound card
The sound card offloads work from your CPU, which in return gives you better overall performance. It also allows for the use of Dolby 7.1 surround sound. ✓

(c) Graphics card
To ensure quick screen response time/quality of images. ✓

(d) CPU
To ensure efficiency (smoothness) OR no lagging when a game is played. ✓ (4)

3.3 3.3.1
- damage equipment, e.g. power supplies, motherboards
- a flickering video display
- unexpected system start-ups
- system not responding
- data loss/losing in a game
- system crashes

(Any legitimate example) ✓ (1)

3.3.2 UPS ✓
OR
Surge protector plugs ✓ (1)

3.3.3 The **OS** is software that is intended to help control, support or operate the computer ✓

OR
Acts as a graphical user interface (GUI) between the user and computer ✓

OR
Controls the hardware ✓

OR
Controls the software ✓ (1)

3.4 Megabyte. ✓ (1)
[20]

QUESTION 4 INTERNET AND NETWORK TECHNOLOGIES

4.1 Fifth **generation** ✓ network (1)

4.2 **How 5G works**

- Works similar to a cellular network using your cell phone.
- Sends data through radio waves.
- Uses a wireless internet connection. ✓

(Accept any legitimate example of how it connects) (1)

4.3 4.3.1 Capped

- The data transfer is limited to a specific amount of GBs in bandwidth every month.
- If you go over a specified limit of bandwidth, your account will have no internet access for the rest of the month.
- The limited amount of data measured in Gigabytes is for downloading and uploading.
- You would not have access to international sites if you have reached your cap.
- You will have to pay a top-up fee if you run out of data.

*(Any **ONE** of the above)* ✓ (1)

4.3.2 Uncapped

- Uncapped internet refers to an internet package where you never run out of bandwidth.
- You have unlimited GB to use at your discretion.
- There is no data transfer limit, you only pay a single rental amount each month.

*(Any **ONE** of the above)* ✓ (1)

4.3.3 Shaped

- Data transfer is controlled by the ISP.
- Certain operations of your account are given priority over others.
- Certain protocols are given preference.

*(Any **ONE** of the above)* ✓ (1)

4.3.4 Unshaped

- Data transfer is not controlled by the ISP and is operated on a first come, first served basis.
- All protocols are treated in the same way and no protocol is given priority.

*(Any **ONE** of the above)* ✓ (1)

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4.4
- Will allow for much faster download and/or upload rates/faster access or exchange of information.
- Ideal for watching video/streaming video/torrenting/connecting.
- Always on – do not have to wait for system to dial up using a telephone line.
- Can use phone while browsing – only one telephone line needed.

*(Any **TWO** valid reasons)* ✓✓ (2)

4.5 4.5.1
- Presence of extra drives such as U:, V: or T: which are simply folders on a server that appear and act as drivers.
- Presence of other computers in network.
- Access to devices such as printers not directly attached to the computer.
- Indicator showing network activity in the notification area.
- Network icon active

*(Any **ONE** possible answer)* ✓ (1)

4.5.2
- A *WLAN* is a wireless ✓ computer network that links two or more devices ✓ using wireless communication to form a local area network (LAN).

OR

A *WLAN* can be defined as a wireless ✓ network that uses radio frequency for communication between two or more computer devices ✓ (2)

4.5.3
- Fibre cables provide faster data transmission than copper cables.
- Fibre cables can span much longer distances than copper cables without data degradation.
- Fibre cable is immune to eavesdropping/better security.
- Fibre cable is not affected by power surges.
- Overall fibre has a lower cost when taking equipment, running costs and maintenance into account.

(*Any **ONE** possible advantage)* ✓ (1)

4.6 Grid computing is a system whereby the resources of different computers are shared ✓ and used at the same time to solve a single problem ✓ so she can ask assistance from fellow researchers. (2)

4.7 A firewall acts as a barrier between your computer and the internet that checks for programs that are trying to access your computer. ✓ Permission needs to be given for any internet application to access your computer. ✓ **OR** a firewall does not check for and/or remove viruses. (2)

4.8 File Transfer Protocol ✓ (1)

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4.9
- Cloud computing can only be used effectively if you have a fast, reliable internet connection **OR** Cloud computing might run slower, depending on the speed of your internet connection.
- You no longer have full control over the security of your data or backup policy
- You may have to pay a monthly fee to make use of the services or to get access to the full set of resources
- The software might not have all the features or capabilities of desktop software.

(*Any **TWO** possible limitations)* ✓✓ (2)

[19]

QUESTION 5 INFORMATION MANAGEMENT

5.1 5.1.1
- The device that needs to be alerted has to be connected ✓ to the specific equipment/data it is responsible for.
- The device and equipment/data will have to be synced ✓ to ensure the correct person will be alerted.

(Any answer related to the fact that the device used and the equipment will need to be connected/linked/synced) (1)

5.1.2
- The device could make a noise.
- The device could vibrate.
- A light could flash on the device.
- Instant messages could be received.
- Synoptic views to show image of what is wrong could be displayed on his device.

*(Any **TWO** of the above)* ✓✓ (2)

5.1.3
- The alarm can be redirected to Cyber Cars Inc. who can then contact Robert Downey Jnr or Chris Hemsworth.
- The alarm can continue until Chris Hemsworth responds and after a while redirect the response to another employee.
- Total shut-down of system until problem resolved or acknowledged.

*(Any **ONE** of the above)* ✓ (1)

5.2
- Monitor any form of power outage/load shedding scheduled.
- Monitor if equipment is fully functional/equipment breakdowns.
- Monitor if staff reported for duty by checking clocking system.

*(Any **TWO** answers)* ✓✓ (2)

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5.3
- Quality of production could be affected due to understaffing.
- The time by which the product should have been completed can be delayed if no plan was made for when there are power outages.
- Should the equipment be faulty and there is no alert, the equipment could break.

*(Any **TWO** of the above as long as disadvantages)* ✓ (2)

5.4
- Spreadsheet ✓
- He could capture the on-call data in a sheet indicating how many times a week he needed to respond to a specific equipment or technology problem and then represent it in a graph. ✓

OR

- Database ✓
- He could capture the data in a table and at the end of every month represent his findings in a detailed report on equipment or technology problems. ✓ (2)

[10]

QUESTION 6 SOCIAL IMPLICATIONS

6.1
- Digital divide ✓ (1)

6.2
- Learn to read quickly and accurately.
- Identify the key points in what you are reading.
- Learn to analyse and compare sources.
- Take a disciplined and structured approach to dealing with information by creating a routine that limits the time you spend on your phone.

*(Any **TWO** of the above)* ✓✓ (2)

6.3 The term is frequently used to describe someone or an app or a device that is currently connected to the internet. ✓ (1)

6.4
- Exposure to electromagnetic radiation will be higher because of the heavy internet usage and might lead to health problems such as a brain tumour or skin cancer.
- The HEV (high-energy visible) light emitted from the screen of a smartphone leads to severe eye-strain during long-time use and could slowly damage the retina.
- Extensive use may cause headaches, decreased attention span, shortness of temper, sleep disorders, insomnia and depression, mostly among teenagers. (Any one of these)
- Addiction to the phone itself can become a problem because of isolation from friends and family as the person is always going to be busy on their phones.
- Potential cause of infection as the touch screen of our phones may have millions of microbes on it, and using it while eating may lead to infection.

*(Any **THREE** of the above)* ✓✓✓ (3)

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6.5 Phishing ✓ (1)

6.6 A bot (or 'robot') refers to a computer that has been compromised (or infected) and can be controlled remotely ✓ when it is on and connected to the internet. It is sometimes called a 'zombie' and the computer's resources (such as computing power) can be illegally used. ✓ (2)

6.7 Anti-spyware software detects spyware by comparing code to known 'definitions', or sample malware code. ✓ The anti-spyware software needs to be updated so that newer forms of spyware can be detected. ✓ Anti-spyware programs also maintain a database of websites known to spread spyware. (2)

[12]

QUESTION 7 SOLUTION DEVELOPMENT

7.1 A primary key is a unique identifier of a particular record in a table. ✓ It is used to correctly manipulate the data in the table to ensure that it cannot be duplicated. ✓ (2)

7.2

FIELD NAME	**DATA TYPE**
SuperName	7.2.1 Text ✓
OperationRequired?	7.2.2 Yes/No ✓
7.2.3 Any suitable UNIQUE field name ✓ (See example below)	7.2.4 Any suitable data type ✓ (See example below)
For example Patient ID	Number **For example**

(4)

7.3 7.3.1 Creating (making) a relationship between the tables. (1)

7.3.2 Table 1 is the client's table. Table 2 is the medical information table. Use the chosen primary key (called the Foreign Key) ✓ from Table 2 and copy it into Table 1. This creates the relationship by using the common field. ✓ (2)

7.4 A tag ✓ (1)

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7.5 You will right click on the file in Explorer ✓ and select Edit with/Open with Notepad^{++} or Notepad. (2)

7.6

Element	Reason to include it in your HTML structure
7.6.1 …	Marks the start and end of a paragraph. ✓ **OR** Space will automatically be created above and below the content. ✓
7.6.2 <!-->	Type notes to yourself or the person who will be maintaining the webpage. ✓ **OR** The text will not display in the web browser. ✓ **OR** Comments to the programmer ✓ **OR** Text that will be ignored by the browser. ✓

(2)
[14]

75 marks

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SECTION C

QUESTION 8 INTEGRATED SCENARIO

8.1 A server is a powerful computer that controls the network ✓ and is different from an ordinary PC that is known as a client computer because it provides resources and services to all the computers that are linked together in a network. ✓

OR

They are generally more powerful than ordinary PCs referred to as client computers ✓ and provide services and resources to users on a network. ✓

(To obtain the full marks there needs to be a reference to ordinary PC) (2)

8.2 Yes, ✓

Data refers to raw, unprocessed facts and computers take data and process it into useful information. ✓ **OR** Information is processed data ✓ (2)

8.3 Passwords/Encryption ✓ and physical safe keeping/backups ✓ (2)

8.4
- Keyboards offer a more accurate way of capturing data since the touch pad on a screen is smaller.
- You could have applications that require the selection of two keys at a time and this is easier on a keyboard.
- Most of the operators will sit at a workstation and it is therefore better to have a keyboard to capture data quickly.
- Shortcut keys can be used to speed up work.
- Touch pad could get very dirty and sticky.

(Any suitable answer to motivate why keyboard could be better) ✓ (1)

8.5
- Because malware/a virus could be loaded on their system ✓
- They work with many clients' information and someone could copy the data and give it to a third party so they need to protect their clients' privacy. ✓ (2)

8.6
- When the barcode is scanned, all the information of the customer is automatically identified.
- If the price or the parcel weight changes, it can be changed at one central place on another computer and the labels will be updated.
- Labels can be used to assist in tracking the parcel as it gets scanned through the different locations that it needs to pass through before delivery. (1)

*(Accept any **ONE** answer)* ✓

8.7
- Braille keyboard
- Braille 'display'
- Magnification devices
- Large-key keyboards

*(Accept any **THREE** reasonable answers that refers to input/output devices for visually impaired operators)* ✓✓✓ (3)

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8.8 It means that the app was designed and written so that it can be installed and run on devices or computers that use either the Android or Microsoft operating system. ✓ (1)

8.9 Minimum requirements are the bare minimum specifications needed to install and use the software. ✓ If you use the recommended requirements instead of the minimum requirements, you will ensure that the software runs effectively/efficiently/at its best ✓ (2)

8.10 8.10.1 Line chart ✓

A line chart shows a trend over a period of time and in this case Globeflight wants to monitor their services over the year. ✓ (2)

8.10.2
- Title of the chart
- Values on chart (Data Lables)
- Gridlines
- Correct use of series
- Labelling of vertical axis and horizontal axis
- Legends
- Error bars
- Colour coding the data points

*(Accept any **FOUR** correct answers that enhance charts)* (4)

8.11 A – Website ✓
B – Facebook ✓
C – YouTube ✓
D – Twitter ✓
*(**MUST** be in correct order)* (4)
[26]

QUESTION 9 INTEGRATED SCENARIO (continue)

9.1 9.1.1 **DEFINITION:**
Disk Clean-up – utility software designed to free up disk space on a computer's hard drive. ✓

HOW IT WORKS:
The utility first searches and analyses the hard drive for files that are no longer of any use, and then removes the unnecessary files. ✓ (2)

9.1.2
- Compress/Zip old files
- Archive files
- Uninstall programmes that are no longer needed

*(Accept any **ONE** of the above)* ✓ (1)

9.2 9.2.1 A small text file created by a website that is stored in the user's computer either temporarily for that session only or permanently on the hard disk. ✓ (1)

9.2.2 Cookies provide a way for the website to recognise you. ✓

OR
Cookies keep track of your preferences. ✓

OR
Cookies store account information for the websites you visit.

*(Accept any **ONE** of the above)* ✓ (1)

9.3 9.3.1 A web browser is a type of application software used to allow people to access and view web pages on the internet. ✓ (1)

9.3.2 A search engine is also software (located on a website), but it is used to search for documents located on the internet ✓ by using keywords or phrases entered by the user when looking for information. (1)

9.4 **Step 1:** Create the graph in the spreadsheet. ✓
Step 2: Copy and paste the graph in the presentation using the link object option. ✓
Step 3: Open presentation and right click to automatically update changes. ✓ (3)

9.5 9.5.1 Exporting means **sending or transferring** a copy of the data/ contents. ✓

OR
Transferring data from your computer.✓ (1)

9.5.2 Importing means **fetching or bringing** in a copy of the data/ contents. ✓

OR
Transferring data to your computer. ✓ (1)

9.6
- need a suitable driver (program) for the operating system
- paper jam
- no cartridge
- no paper/incorrect paper size
- not connected properly/not switched on
- print job stuck in printer queue, etc.

*(Accept any **TWO** of the above)* ✓✓ (2)

9.7 9.7.1 Electronic form ✓ (1)

9.7.2
- Closed questions/questions with only one possible answer.
- Non-ambiguous questions.
- Questions must relate to the topic/research.
- Questions where the respondent chooses the answer from a list/ radio buttons/combo boxes/selection buttons.
- Questions should be short and to the point.

*(Accept any **ONE** of the above)* ✓ (1)

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9.7.3
- Negative hours/numbers will be accepted.
- Logical operators (signs) are the wrong way around.
- Very high hours will be accepted as there is no limit to prevent that 8 hours will be exceeded.
- Wants to check the range 0 to 8 but is checking outside the range. (2)

*(Accept any **TWO** of the above)* ✓✓

9.8 9.8.1 **A virtual keyboard is** created by projecting an image of a computer keyboard ✓ onto a flat surface like a table, or onto the screen itself. ✓ (2)

9.8.2 **Advantage:**
- It saves space.
- You do not have to purchase or repair a keyboard.
- They can be used by users with physical disabilities who struggle to use conventional keyboards.
- You can easily configure the keyboard layout for different languages, etc.

*(Accept any **ONE** of the above)* ✓ (1)

9.8.3 **Disadvantage:**
- You don't have the 'feel' of typing on a physical keyboard, which can help you to 'detect' if you have not pressed a key or if you pressed two keys by mistake.
- They limit the amount of viewing space if they are projected onto the screen or monitor, etc.
- You cannot work as fast as you would on a normal keyboard.

*(Accept any **ONE** of the above)* ✓ (1)

9.9 Widget/gadget/shortcut/icon ✓

Another example:

- displaying the calendar or time on a clock
- giving the latest news and weather
- providing system resource meters
- showing available games (such as Picture Puzzle)
- running a slideshow of all your pictures, etc.

*(Accept any **ONE** of the above and accept any answer that mentions an often-used app)* ✓ (2)

[24]

50 marks

Total: 150 marks

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